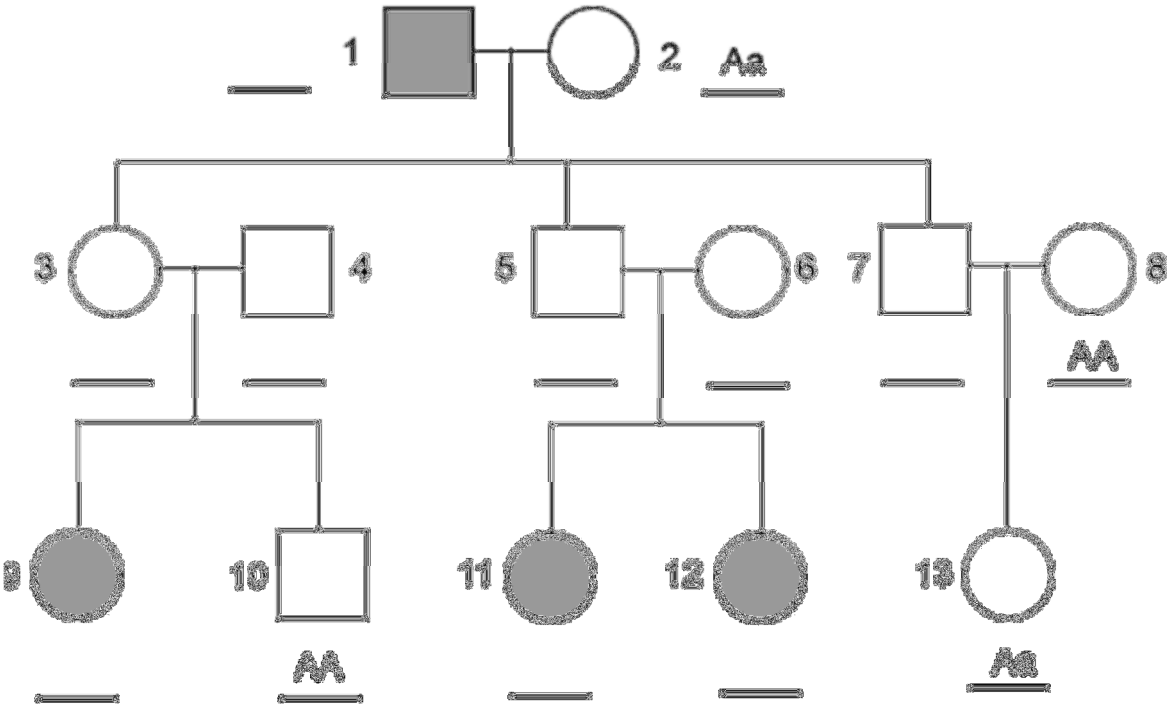
Name _____

Autosomal Pedigrees

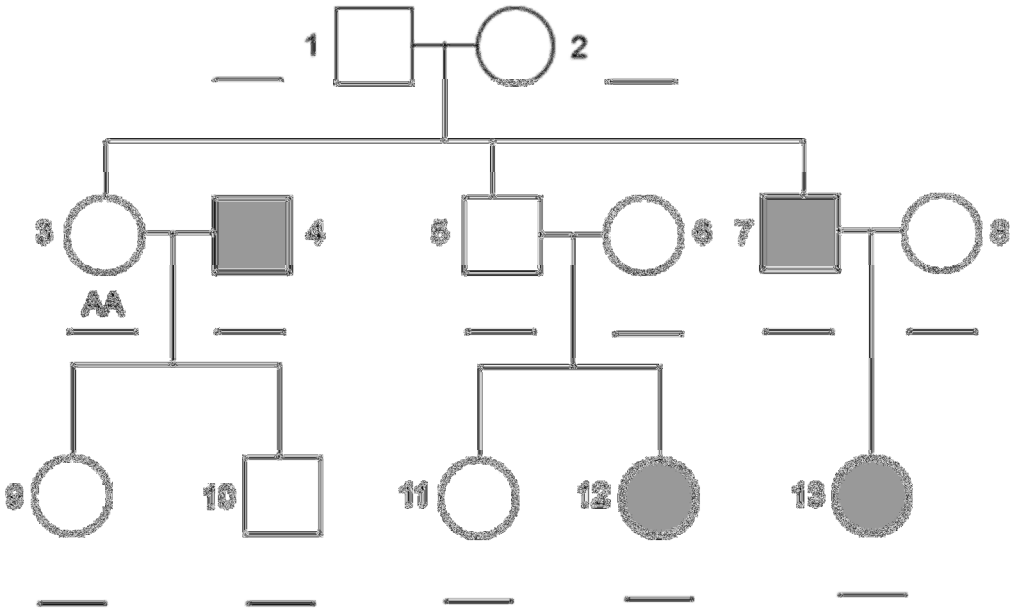
Pedigrees are used to trace a gene as it is passed down from generation to generation. The squares represent a male and the circles represent a female. In the examples on this handout, the shaded circles and squares will represent having the disorder.
Make sure to read each question to find out if a disorder is caused by dominant alleles or recessive alleles. A person can be a carrier of a trait, meaning they have heterozygous alleles. After you have filled in the appropriate genotypes, answer the bulleted question next to/below each pedigree.

1) Cystic fibrosis is an autosomal recessive disease where mucus develops in the lungs, liver, and the pancreas. Below is an autosomal pedigree tracing the passing of the cystic fibrosis gene through 3 generations. Write in the genotypes on the line next to / below each individual.



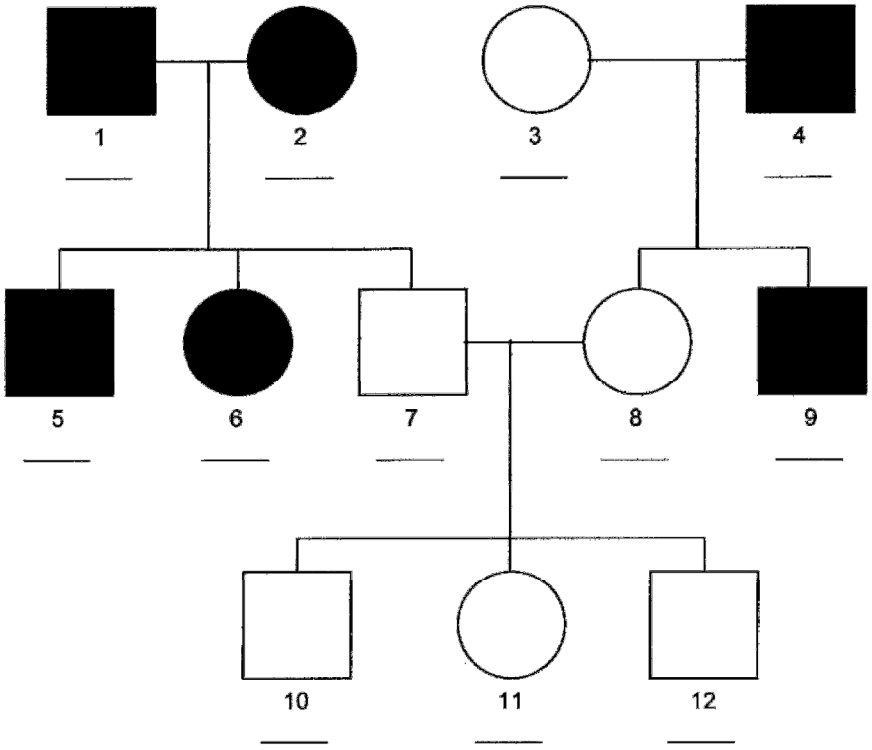
- Why did individuals 9, 11, and 12 get the disorder but their parents did not have the disorder?

2) Sickle-cell anemia is an autosomal recessive genetic disorder that causes red blood cells to change shape, which can cause the red blood cells to become stuck in blood vessels. Write in the genotypes on the line next to / below each individual.



- Individuals who are heterozygous for the sickle-cell allele are less susceptible to malaria. Which individuals in this pedigree have this advantage?

3) Huntington's disease is an autosomal dominant genetic disorder that affects the nervous system. Individuals usually don't show any symptoms until they have reached their thirties or forties, and thus may have unknowingly passed the trait onto their offspring. Write in the genotypes on the line next to / below each individual.

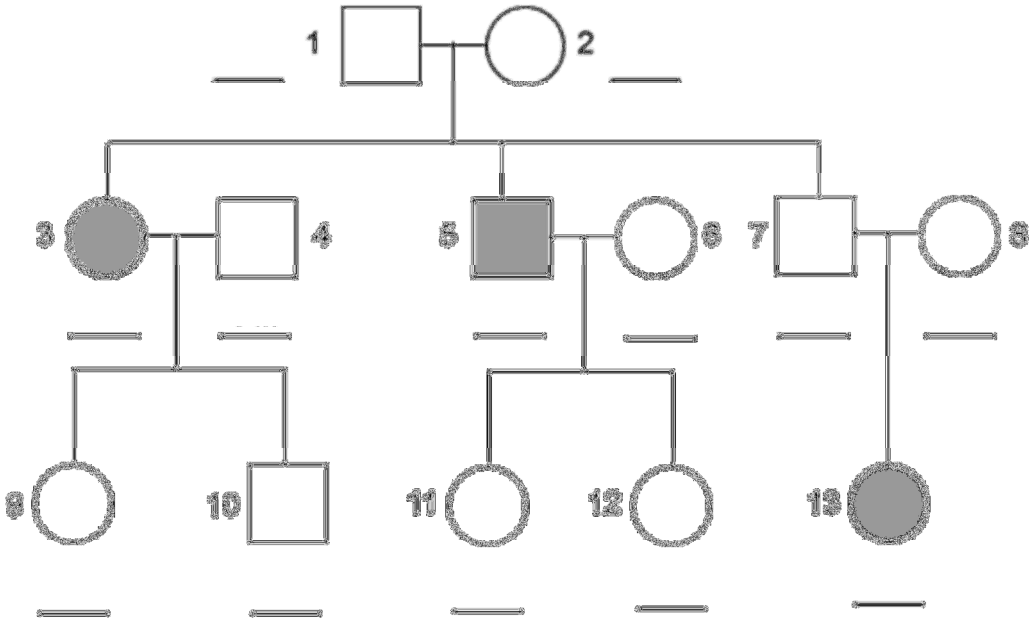


- In this particular pedigree, there are as many affected individuals as unaffected individuals. How can you determine from this pedigree that Huntington's disease is dominant and not recessive?

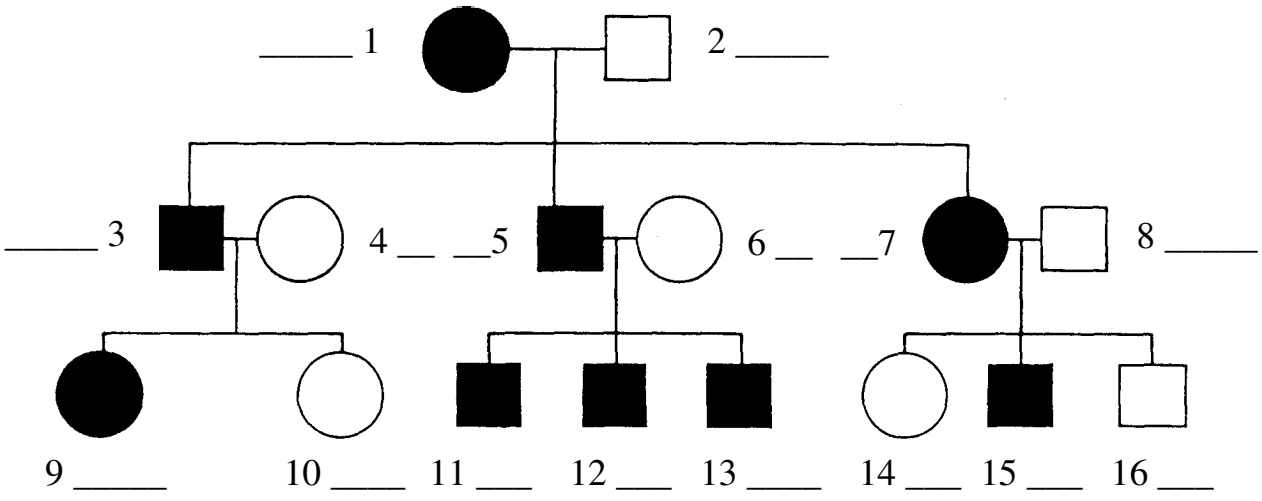
For each of the following pedigrees:

- Determine whether the pattern of inheritance is autosomal dominant or autosomal recessive
- Determine the genotypes of each individual
    - Use the genotypes AA, Aa, and aa

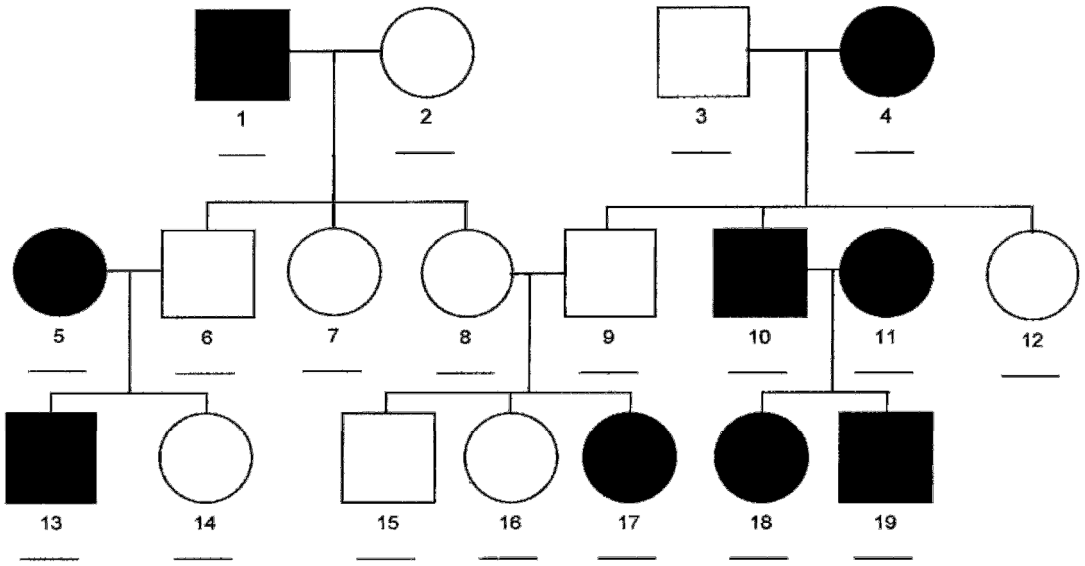
4) Autosomal _____ disorder



5) Autosomal _____ disorder



6) Autosomal _____ disorder



Drawing Pedigrees

7) Albinism is an autosomal recessive condition that affects males and females and can skip generations due to carriers. Homozygous recessive individuals lack an enzyme needed to produce melanin, which colors the eyes, skin, and hair. Draw a pedigree to depict the following family:

- An albino man (1) marries a normally pigmented woman (2) and they have a normally pigmented son (3).
- Two normally pigmented parents (4 and 5) have an albino daughter (6).
- The normally pigmented son (3) marries the albino daughter (6) and they have three children
    - One normally pigmented daughter (7)
    - One normally pigmented son (8)
    - One albino daughter (9)